Supplemental Guidelines for Institutional National Research Service Award (T32)
National Heart, Lung, and Blood Institute

This notice supplements the NIH Program Announcement for the Research Service Award Institutional Research Training Grants (PA-00-103) http://grants.nih.gov/grants/guide/pa-files/PA-00-103.html described in the NIH Guide for Grants and Contracts, 6/2/00, with additional information specific to the NHLBI award. These Supplemental Guidelines will go into effect for all T32 applications submitted to the NHLBI for the May 2001 submission deadline. They are to be used in conjunction with the NIH T32 guidelines and PHS Form 398 referenced at the end of this document. Other documents detailing NIH-wide requirements, describing the application format, and providing answers to frequently asked questions are listed at the end of this document. All potential applicants, whether applying for new or renewal awards, are encouraged to consult with NHLBI program staff, identified under "INQUIRIES," when planning an application.

I. INTRODUCTION

The NHLBI has recently reviewed its research training and career development programs to ensure that they will produce the research workforce needed for the future of heart, lung, blood and sleep disorders research. A workshop and other deliberations have identified specific areas needing increased emphasis in NHLBI's Institutional National Research Service Award (NRSA) Research Training Grants (T32s), which are the cornerstone of NHLBI training activities.

Areas of training to receive increased emphasis by NHLBI include:

1. providing multidisciplinary training and exposure of trainees to collaborative research;

2. developing new investigators with the necessary competencies and breadth of expertise needed for the future of biomedical research;

3. ensuring that trainees receive adequate mentorship, and that mentorship is taught and evaluated;

4. recruiting and retaining such investigators in the scientific workforce and ensuring adequate representation of the nation’s diversity in that workforce; and

5. providing a continued flow of qualified physician-scientists able to translate findings freely between the basic and clinical spheres.

To ensure that T32 applications address these areas of emphasis, the NHLBI has set forth the following specific requirements and review criteria.

II. SPECIAL REQUIREMENTS AND PROVISIONS

A. Special NHLBI Programmatic Emphases:

1. Multidisciplinary training

    a. At all stages of education and training, Program Directors should foster broad, multidisciplinary approaches to research, including encouragement of interaction and collaboration among trainees in related disciplines. This could include travel by trainees to other laboratories outside the applicant institution to receive training in specialized disciplines, methodologies, or technologies.

    b. Program Directors should encourage new trainees to widen the scope of their interests and capabilities, to avoid too narrow a focus too early in their careers and to develop the flexibility needed for pursuing rapidly evolving scientific advances.

    c. NHLBI encourages development of novel programs of research training, to emphasize multidisciplinary team approaches, networking, and collaboration, emphasizing the competencies needed for the future of biomedical research.

    d. NHLBI encourages development of "virtual" research training centers, to link (electronically or through other means) multiple institutions with unique or specific expertise to address a common problem. Program Directors are encouraged to broaden training experiences beyond a single institution (in academia and industry) using both long and short-term training experiences. Such experiences might include exchanges of faculty and students. Plans should be described for how interactions among participants will take place.

2. Necessary competencies

    a. Applicants are encouraged to identify scientific disciplines and evolving areas of scientific need which are currently under-represented and to design and implement training programs in such disciplines. Documentation of available opportunities in such fields and of the lack of qualified scientists to realize these opportunities should be included to justify emphasis on these evolving areas.

    b. Programs in disciplines related to clinical research should also include training in bioethics, clinical trials and behavioral science. When possible and appropriate, training programs should include training in state-of-the-art technologies, integrative approaches, and such mathematically-based areas as bioinformatics and statistics.

    c. Training at the pre- and postdoctoral levels should include "survival skills" such as grant and manuscript writing, public speaking, obtaining funding, mentorship (that is, providing skills that will enable current trainees to train subsequent "generations" of scientists), and establishing research collaborations in a multidisciplinary setting.

3. Mentorship

    a. NHLBI encourages "group mentorship," where multiple senior partners in team-based research lend their individual expertise to the trainee, as appropriate to the trainee's level of development and under the overall guidance of the Program Director.

    b. Program Directors should provide a detailed mentoring plan for the "typical" trainee and should describe the process by which specific plans will be developed for future trainees, including a description of approaches to be used in mentoring and methods for evaluating and reporting effectiveness of the mentoring program in annual progress reports. Formal evaluation by trainees is encouraged (see sample NHLBI Mentorship Evaluation Form). Formal evaluation of trainees by their mentors or advisory committees is also encouraged.

    c. Applicant institutions should demonstrate their support of mentoring, in terms of institutional administrative support, protected time for mentoring, and departmental support for student activities. They should detail the steps taken to ensure that trainees are aware of what they may expect from their mentors and institutions and what in turn is expected of them;

    d. Consideration should be given to including as mentors or co-mentors junior faculty who have established active, independent research programs early in their careers. The mentoring abilities of dynamic young investigators may need to be documented in ways other than a long track record of producing seasoned independent investigators, but the value of such individuals as role models should not be underestimated.

    e. Where possible and practical, the training experience should be broadened by encouraging the active participation of scientists and laboratories in industry settings. This could include industry scientists acting as mentors on training grants or providing short-term experiences in industry settings for trainees. Cost sharing in such partnerships on the part of industry is encouraged.

4. Workforce diversity

    a. NHLBI encourages vigorous efforts to recruit and retain underrepresented minority trainees in its NRSA programs. Once all training positions are filled, including an adequate representation of minority trainees, institutional NRSA training grants funded by NHLBI may request an administrative increase to support an additional underrepresented minority trainee. Procedures for requesting these increases are available at: Instructions for Applicants: Minority Trainee Positions on NRSA Training Grants (T32). NHLBI encourages the recruitment of eligible individuals from the full spectrum of minority groups, but with special emphasis on those

underrepresented in biomedical research, including Blacks, Hispanics, Native Americans, and Pacific Islanders.

b. NHLBI recognizes the need for flexibility in scheduling and career program development for trainees beginning families and facing other unique pressures. Requests for exceptions to some NRSA guidelines are considered on a case by case basis by NHLBI program staff (listed under Inquiries), who should be consulted whenever such situations arise.

5. Clinical research

a. NHLBI encourages development of physician-investigators with necessary skills to translate research findings from the laboratory and clinical research program into clinical practice.

b. Programs of clinical relevance should be established for PhD scientist-trainees, with an emphasis on postdoctoral training and course work in human biology and behavioral science, to facilitate their subsequent engagement in human subjects research or clinical trials.

c. NHLBI encourages its center programs, clinical networks and multicenter studies to provide opportunities for training clinical investigators, and PhD scientists working in clinically-related disciplines, in collaborative clinical research.

d. Applicants are encouraged to develop innovative approaches to training physicians and non-physicians in clinical research skills in the context of NHLBI clinical networks and multicenter studies. Such training can be facilitated by building on existing study infrastructure and ongoing activities. Programs that foster translational research skills bridging basic and clinical research are encouraged.

B. NHLBI Provisions of Award

1. Support may be requested for predoctoral training, postdoctoral training, or a combination of both as defined under the NRSA guidelines. In addition, applicants may request support for a short-term (that is, 2-3 months' duration) research training for health professional students.

2. The NHLBI will not award costs through the tuition and fees category for items such as malpractice insurance, computer fees, or radioactive waste disposal.

3. Up to $1,400 per trainee per year may be requested for trainee travel (for pre- and post-doctoral trainees only).

4. Stipend increases are reviewed annually and will be incorporated into future year commitments. Actual funding levels for each budget period will be determined annually following NHLBI staff evaluation of the non-competing renewal application.

C. Special NHLBI Programmatic Requirements: Recruitment of Minority Individuals

NHLBI is strongly committed to ensuring diversity in its research training programs. Each application must include plans for the active recruitment of minority individuals. Detailed instructions on preparing the minority recruitment portion of the application can be found on pages V-5 and V-6 in the PHS-398 (rev. 4/98). While it is appropriate to describe minority recruitment activities supported by the applicant institution (i.e., Office of Minority Affairs, etc.), this type of activity is generally not specific to an individual training grant. Applicants should also describe their personal involvement in recruitment efforts for the specific application (visits to minority institutions, personal follow-up of potential applicants and interviewees, etc.) Emphasis should be on recruitment of minorities underrepresented in the behavioral and biomedical sciences, including African Americans, Hispanic Americans, Native Americans (including Alaska Natives) and natives of the U.S. Pacific Islands.

III. APPLICATION PROCEDURES

A. Application Receipt, Review and Award Dates:

There is one annual receipt date for all NHLBI T32 Institutional NRSA grant applications: May 10. Initial peer review is conducted by review groups organized and managed by the NHLBI and is usually completed in October/November. Review by the National Heart, Lung, and Blood Advisory Council is usually completed in January/February. The earliest possible award date is April.

B. Where to Send the Application:

The original and three copies of the application should be submitted to the Center for Scientific Review (CSR, NIH at the following address:

Center for Scientific Review
National Institutes of Health
6701 Rockledge Drive, Room 1040-MSC 7710
Bethesda, Maryland 20892-7710
Bethesda, Maryland 20817 (For express/courier service)

To expedite the review process conducted by NHLBI, two additional copies should be sent to:

Chief, Review Branch
Division of Extramural Affairs
National Heart, Lung, and Blood Institute

Two Rockledge Center, Suite 7093
6701 Rockledge Drive, MSC 7924
Bethesda, MD 20892-7924
Rockville, MD 20817 (express/courier service)

Prior to submission, applicants are strongly encouraged to contact the appropriate program official to discuss preparation and review of the application (see VII INQUIRIES).

IV. REVIEW PROCEDURES AND CRITERIA

A. Review Procedures:

Upon receipt, applications will be reviewed by the Center for Scientific Review (CSR) and the National Heart, Lung, and Blood Institute (NHLBI) for completeness and conformance to all eligibility requirements and special provisions and requirements. Incomplete or ineligible applications will be returned to the applicant without further consideration.

Applications judged to be complete and eligible will be evaluated for merit by a peer review group convened by the NHLBI Division of Extramural Affairs. NHLBI has several specific review criteria related to its areas of emphasis, as described below, which will be used in addition to the peer review criteria stated in the NIH T32 Guidelines. Applications will receive a second-level review by the National Heart, Lung, and Blood Advisory Council to ensure that they meet the broad programmatic needs and priorities of the NHLBI.

B. Review Criteria:

1. **Mentoring Plans**: The quality of mentoring plans will be evaluated and reflected in the priority score based on:

    a. Adequacy and appropriateness of specific mentoring plan (for individual trainees) or representative plan (and proposals for tailoring it to needs of multiple trainees), to include:

        i. Identification of primary mentor and secondary mentors or advisors and specific areas in which they will provide guidance;

        ii. Description of specific time commitment of primary mentor to trainee/candidate and how it may change as needed during the training period;

        iii. Adequacy and appropriateness of steps taken to ensure that trainees are aware of what they may expect from their mentors and institutions and what in turn is expected of them;

iv. Timeline for training and career development with specific milestones for acquiring necessary scientific knowledge and for developing research and communication skills, logical reasoning, independent thinking, ability to collaborate, collegial relationships with professional community, responsible scientific behavior, and career planning (including planned publications and future grant support);

v. Provisions for facilitating transition of trainee to a more independent status; and

vi. Relationship of mentoring plan to candidate's stated career goals and career development plan (for a single candidate) or to representative training plan (for multiple trainees).

b. Experience and expertise of the mentor(s) in providing training and career development.

c. Experience and expertise of the mentor(s) in a scientific discipline aligned with the career plans of the trainee.

2. **Training Environment**: The training environment will be evaluated in regard to the adequacy and appropriateness of plans to pursue the Special NHLBI Programmatic Emphases and Guidelines described above, including:

a. Adequacy and appropriateness of plans for training in scientific competencies needed for the future of heart, lung, blood and sleep disorders research, including:

i. Didactic courses, hands-on research participation, and other training experiences in areas of scientific need which currently are or are anticipated to be under-represented. Such programs should be justified by documentation of scientific opportunities in the proposed area and demonstration of expected lack of qualified personnel to pursue them in the near future.

ii. "Survival skills," such as seminars or courses on grant and manuscript writing, public speaking, obtaining funding, mentorship skills and establishing research collaborations in a multidisciplinary setting.

iii. Training in state-of-the-art technologies, integrative approaches, and such mathematically-based areas as bioinformatics and statistics where relevant, and demonstration of close integration of such training in the overall training program.

b. Evidence of multidisciplinary approaches to research training, designed to produce trainees able to bridge disciplines and move rapidly into new disciplines as they emerge, including:

i. Involvement and integration of mentors from multiple related disciplines in providing a coordinated training program to individual trainees.

ii. Exposure of trainees to multidisciplinary research environments and their inclusion in such environments when feasible and appropriate.

iii. Evidence of collaboration and interaction among training programs and trainees in related disciplines, to include exchanges of faculty and trainees, linking of multiple institutions, or other approaches, with clear plans for how productive interactions among participants will be established and monitored.

c. Adequacy and appropriateness of plans for training in clinical research, to include:

i. Plans for effective use of NHLBI center programs, clinical networks and multicenter studies to provide opportunities for training clinical investigators and PhD scientists in collaborative clinical research.

ii. Didactic courses, hands-on research participation, and other training experiences in disciplines fundamental to clinical research such as bioethics, clinical trials and behavioral science.

iii. Programs of clinical relevance for PhD scientist-trainees, with an emphasis on postdoctoral training and course work in human biology and behavioral science.

d. The level of institutional commitment, including:

i. Institutional administrative support;

ii. Protected time for mentoring; and

iii. Departmental support for student activities.

3. **Minority Recruitment Plan:** The plan must be specific for the program under review and must be approved by the NHLBI before an award can be made. In addition to the NIH review criteria NHLBI uses the following criteria in evaluating the plan;

a. Adequacy of the plan for recruiting minority individuals into the proposed training program.

b. For competing continuation applications, track record of the plan in recruiting minorities.

c. For revised or competing continuation applications, modifications of the plan since the last review to overcome deficiencies.

V. AWARD CRITERIA

Shortly after review of the competing application by the National Heart, Lung, and Blood Advisory Council, the NHLBI will notify the applicant of his/her funding status. Awards are made based on the availability of funds each fiscal year, the degree of merit as determined by peer reviewers and the program priorities of the NHLBI.

VI. OTHER DOCUMENTS OF USE IN PREPARING APPLICATIONS

A. The Public Health Service (PHS) policies governing the National Research Service Award program form the basis for the NRSA policies and management procedures of the NIH and the NHLBI. NIH policies and procedures for NRSA grants are described in "NIH National Research Service Award Institutional Research Training Grants" available at http://grants.nih.gov/grants/guide/pa-files/PA-00-103.html and "National Research Service Award Guidelines" available at http://grants.nih.gov/training/nrsaguidelines/nrsa_III.htm .

B. The Form PHS 398 application kit, available at http://grants.nih.gov/grants/funding/phs398/phs398.html, contains special instructions (Section V) for the Institutional NRSA (Pages V-1 through V-8) available at: http://grants.nih.gov/grants/funding/phs398/section_5.html.

C. Specific NHLBI funding guidelines for NRSA programs are described in "NHLBI FY 2000 Funding and Operating Guidelines: NRSA and Career Awards" available at http://www.nhlbi.nih.gov/funding/policies/tkf-2000.htm .

D. Many of the T32 policies specific to NHLBI have evolved in response to the report of the November 1999 NHLBI workshop, “Research Training and Career Development: Human Resources for Research in the 21st Century,” available at http://www.nhlbi.nih.gov/funding/training/train-rev.htm. This workshop was summarized in an editorial by the Director, NHLBI, entitled “Training the Next Generation of Biomedical Researchers: Challenges and Opportunities,” published in the 7/25/00 issue of *Circulation*, volume 102, Number 4; p.368-370.

E. Two other documents of potential use in preparing applications are "Frequently Asked Questions for Applications to Institutional National Research Service Awards (T32)" and "Format and Required Tables for Applications for Institutional National Research Service Award (T32).

F. Recruitment strategies for underrepresented minority individuals are described in "Recruitment of Minority Individuals into Institutional National Research Service Awards (T32)".

G. Excellent guides to professional mentorship are available and prospective Program Directors are encouraged to use them in developing their training programs. The NIH Intramural Program's Guide to Training and Mentoring is available at: http://www1.od.nih.gov/oir/sourcebook/ethic-conduct/mentor-guide.htm. The National Academy of Sciences has an extensive mentorship guide available at: http://www.nap.edu/readingroom/books/mentor/.

VII. INQUIRIES

Programmatic or scientific issues: For more information and/or advice about the objectives and scope of this award, eligibility requirements, structure and organization of grant applications and peer review trends, please contact the scientific staff in the relevant Division as listed below. For applicants in the area of sleep disorders research, contact the Division most relevant to the training program being proposed.

For training in the program areas of Division of Heart and Vascular Diseases, contact:

Dr. Michael Commarato
Division of Heart and Vascular Diseases
6701 Rockledge Dr., Room 9138
MSC 7940
Tel: 301-435-0535
Fax: 301-480-1335
Email: commaram@nhlbi.nih.gov

For training in the program areas of Division of Lung Diseases, contact:

Ms. Ann Rothgeb
Division of Lung Diseases
6701 Rockledge Dr., Room 10018
MSC 7952
Tel: 301-435-0202
Fax: 301-480-3557
Email: rothgeba@nhlbi.nih.gov

For training in the program areas of the Division of Blood Disease and Resources, contact:

Ms. Joyce Creamer
Division of Blood Diseases and Resources
6701 Rockledge Dr., Room 10180
MSC 7950
Tel:301-435-0061
Fax: 301-480-0867
email: creamerj@nhlbi.nih.gov

For training in the program areas of the Division of Epidemiology and Clinical Applications, contact:

Ms. Lorraine Silsbee
6701 Rockledge Dr., Room 8158
MSC 7934
Tel: 301-435-0709
Fax: 301-480-1667
Email: silsbeel@nhlbi.nih.gov

Fiscal Issues:

For more information about the appropriate procedures for dealing with issues that involve changes in the scope of the project as awarded, budget and period of support of the award or that involve any other issues requiring approval by the NHLBI or post award actions, please contact the Grants Administration official listed below:

Mr. Edward Donohue
6701 Rockledge Dr., Room 7160
MSC 7926
Tel: 301-435-0144
Fax: 301-480-3310
Email: donohuee@nhlbi.nih.gov